

PATENT COOPERATION TREATY

PCT

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

(Chapter II of the Patent Cooperation Treaty)

(PCT Article 36 and Rule 70)

REC'D 21 MAR 2006

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Applicant's or agent's file reference LYON 1001	FOR FURTHER ACTION		See Form PCT/IPEA/416
International application No. PCT/US04/12363	International filing date (day/month/year) 22 April 2004 (22.04.2004)	Priority date (day/month/year) 23 April 2003 (23.04.2003)	
International Patent Classification (IPC) or national classification and IPC IPC(7): H04R 3/00 and US Cl.: 381/96			
Applicant RH LYON CORP			
<p>1. This report is the international preliminary examination report, established by this International Preliminary Examining Authority under Article 35 and transmitted to the applicant according to Article 36.</p> <p>2. This REPORT consists of a total of <u>5</u> sheets, including this cover sheet.</p> <p>3. This report is also accompanied by ANNEXES, comprising:</p> <p>a. <input type="checkbox"/> (sent to the applicant and to the International Bureau) a total of _____ sheets, as follows:</p> <p style="margin-left: 40px;"><input type="checkbox"/> sheets of the description, claims and/or drawings which have been amended and are the basis of this report and/or sheets containing rectifications authorized by this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions).</p> <p style="margin-left: 40px;"><input type="checkbox"/> sheets which supersede earlier sheets, but which this Authority considers contain an amendment that goes beyond the disclosure in the international application as filed, as indicated in item 4 of Box No. I and the Supplemental Box.</p> <p>b. <input type="checkbox"/> (sent to the International Bureau only) a total of (indicate type and number of electronic carrier(s)) _____, containing a sequence listing and/or tables related thereto, in electronic form only, as indicated in the Supplemental Box Relating to Sequence Listing (see Section 802 of the Administrative Instructions).</p>			
<p>4. This report contains indications relating to the following items:</p> <p><input checked="" type="checkbox"/> Box No. I Basis of the report</p> <p><input type="checkbox"/> Box No. II Priority</p> <p><input type="checkbox"/> Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability</p> <p><input type="checkbox"/> Box No. IV Lack of unity of invention</p> <p><input checked="" type="checkbox"/> Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement</p> <p><input type="checkbox"/> Box No. VI Certain documents cited</p> <p><input type="checkbox"/> Box No. VII Certain defects in the international application</p> <p><input type="checkbox"/> Box No. VIII Certain observations on the international application</p>			
Date of submission of the demand 14 April 2005 (14.04.2005)		Date of completion of this report 01 February 2006 (01.02.2006)	
Name and mailing address of the IPEA/ US Mail Stop PCT, Attn: IPEA/US Commissioner for Patents P.O. Box 1450 Alexandria, Virginia 22313-1450 Facsimile No. (571) 273-3201		Authorized officer Brian T. Pendleton Telephone No. (703) 305-4700	

Form PCT/IPEA/409 (cover sheet)(April 2005)

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

International application No.

PCT/US04/12363

Box No. I Basis of the report

1. With regard to the language, this report is based on:

- ☒ the international application in the language in which it was filed.
- ☐ a translation of the international application into English, which is the language of a translation furnished for the purposes of:
- ☐ international search (under Rules 12.3 and 23.1(b))
- ☐ publication of the international application (under Rule 12.4(a))
- ☐ international preliminary examination (under Rules 55.2(a) and/or 55.3(a))

2. With regard to the elements of the international application, this report is based on *(replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report)*:

- ☒ the international application as originally filed/furnished
- ☒ the description:
- pages 1-63 as originally filed/furnished
- pages* NONE received by this Authority on _____
- pages* NONE received by this Authority on _____
- ☒ the claims:
- pages 64-93 as originally filed/furnished
- pages* NONE as amended (together with any statement) under Article 19
- pages* NONE received by this Authority on _____
- pages* NONE received by this Authority on _____
- ☒ the drawings:
- pages 1-14 as originally filed/furnished
- pages* NONE received by this Authority on _____
- pages* NONE received by this Authority on _____
- ☐ a sequence listing and/or any related table(s) - see Supplemental Box Relating to Sequence Listing.

3. ☐ The amendments have resulted in the cancellation of:

- ☐ the description, pages _____
- ☐ the claims, Nos. _____
- ☐ the drawings, sheets/figs. _____
- ☐ the sequence listing (*specify*): _____
- ☐ any table(s) related to the sequence listing (*specify*): _____

4. ☐ This report has been established as if (some of) the amendments annexed to this report and listed below had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).

- ☐ the description, pages _____
- ☐ the claims, Nos. _____
- ☐ the drawings, sheets/figs. _____
- ☐ the sequence listing (*specify*): _____
- ☐ any table(s) related to the sequence listing (*specify*): _____

* If item 4 applies, some or all of those sheets may be marked "superseded."

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

International application No.
PCT/US04/12363

Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Claims <u>Please See Continuation Sheet</u>	YES
	Claims <u>Please See Continuation Sheet</u>	NO
Inventive Step (IS)	Claims <u>Please See Continuation Sheet</u>	YES
	Claims <u>Please See Continuation Sheet</u>	NO
Industrial Applicability (IA)	Claims <u>Please See Continuation Sheet</u>	YES
	Claims <u>Please See Continuation Sheet</u>	NO

2. Citations and Explanations (Rule 70.7)
Please See Continuation Sheet

Supplemental Box

In case the space in any of the preceding boxes is not sufficient.

Continuation of:

V.1. Reasoned Statements:

The opinion as to Novelty was positive (Yes) with respect to claims 1-74, 76, 78, 83-134, 136, 138, 144

The opinion as to Novelty was negative (No) with respect to claims 75, 77, 79-82, 135, 137, 139-143, 145-149

The opinion as to Inventive Step was positive (Yes) with respect to claims 2-5, 16-20, 43-46, 56-60, 78, 87-89, 93, 94, 98-105, 119-126, 138

The opinion as to Inventive Step was negative (NO) with respect to claims 1, 6-15, 21-42, 47-55, 61-77, 79-86, 90-92, 95-97, 106-118, 127-137, 139-149

The opinion as to Industrial Applicability was positive (YES) with respect to claims 1-149

The opinion as to Industrial Applicability was negative (NO) with respect to claims NONE

V. 2. Citations and Explanations:

Claims 1, 6-15, 21, 23-28, 33, 35-42, 47-55, 61-66, 70-74, 86, 90-92, 95-97, 106-113, 116-118, 127-133 and 149 lack an inventive step under PCT Article 33(3) as being obvious over Ouyang et al, US Patent Application Publication US 2003/0044025 in view of Hobelsberger, US Patent 6,408,078. Ouyang et al disclose a system comprising a plurality (array) of sensors 12, 20; a loudspeaker 40 and a first signal processor 11. Ouyang does not disclose a second signal processor for generating an output signal to the loudspeaker that is proportional to the estimate of the pressure derivative along the sensor axis. Hobelsberger '078 discloses a system for absorbing noise comprising a controller 13 (second signal processor), amplifier 12 and transducer 10. The noise is absorbed by utilizing the derivative of the pressure picked up by sensor 8. It would have been obvious to one of ordinary skill in the art at the time of invention to combine the references for the purpose of absorbing noise in the Ouyang device, which would improve speech comprehension during a telephone conversation. Independent claims 1, 42, 86, 95, 116, and 149 are met. The dependent claims are met by inherency.

Claims 29-32, 67, 68, 114, 115 and 134 lack an inventive step under PCT Article 33(3) as being obvious over the prior art as applied in the immediately preceding paragraph and further in view of Stamegna, US Patent 6,085,078. The combination does not explicitly disclose that it is part of a cellular telephone system which uses RF signals. However, it was well known and obvious that cellular telephones suffer from the background noise problems and voice propagation problems and use directional microphones (as evidenced by Stamegna) therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to embody the combination of Ouyang and Hobelsberger '078 in a cellular phone.

Claims 33 and 69 lack an inventive step under PCT Article 33(3) as being obvious over the prior art as applied in the immediately preceding paragraph and further in view of Stonikas et al, US Patent 6,393,130. The combination does not specify a shroud in the apparatus. Stonikas teaches that a shroud is used to reduce feedback between a telephone microphone and speaker. Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to modify the combination of Ouyang and Hobelsberger '078 to include a shroud to improve performance.

Supplemental Box

Claim 22 is an inventive step under PCT Article 33(3) as being obvious over the prior art as applied in the immediately preceding paragraph and further in view of Yang, US Patent 5,914,912. Yang discloses a sonar array post processor which uses a hydrophone for directional beamforming. It would have been obvious to one of ordinary skill in the art at the time of invention to use a hydrophone in the combination of Ouyang and Hobelsberger for the purpose of producing a directional microphone signal underwater.

Claims 75, 77, 79-82, 135, 137, 139-143, 145-148 lack novelty under PCT Article 33(2) as being anticipated by Hobelsberger, US Patent 5,812,686. Hobelsberger discloses a device for simulation of an acoustic impedance comprising acceleration sensor 5, loudspeaker 4 and signal processors 8 and 9.

Claims 85 and 144 lack an inventive step under PCT Article 33(3) as being obvious over Hobelsberger in view of Yang. Hobelsberger does not disclose that the system is utilized in water. Yang discloses a system which is underwater and uses sonar microphones. It would have been obvious to one of ordinary skill in the art at the time of invention to use the system of Hobelsberger in water.

Claims 76 and 136 lack an inventive step under PCT Article 33(3) as being obvious over Hobelsberger '686 in view of Ouyang. Hobelsberger does not disclose an array of pressure sensors. However, it was suggested by Hobelsberger '686 to use the apparatus to eliminate standing waves inside housings. Therefore, one of ordinary skill in the art would have been motivated to use the apparatus in the Ouyang device for the purpose of decreasing voice signals from the user.

Claim 143 lacks an inventive step under PCT Article 33(3) as being obvious over the prior art as applied in the immediately preceding paragraph and further in view of Yang. Yang discloses a sonar array post processor which uses a hydrophone for directional beamforming. It would have been obvious to one of ordinary skill in the art at the time of invention to use a hydrophone in the combination of Ouyang and Hobelsberger for the purpose of producing a directional microphone signal underwater.

Claims 2-5, 16-20, 43-46, 56-60, 78, 83, 84, 87-89, 93, 94, 98-105, 119-126 and 138 meet the criteria set out in PCT Article 33(2)-(3), because the prior art does not teach or fairly suggest a third and fourth processor or a comparator coupled to the output of the signal processor that generates the weighted pressure sum signal.